(SQ – 12) Wind Erosion Management Considerations (Assessment Guide)

E = f (IKCLV): E = estimated avg. annual soil loss in tons/ac/yr; f = relationships are not straight-line mathematical calculations; I = soil erodibility index; K = soil surface roughness factor; C = climatic factor; L = unsheltered distance; V = vegetative cover

I		K		C	Mo.	%EWE	L		V
WEG	SEI T/ac/yr	Krd	Krr	NM C factors			WED Factor		Lbs/acre of residues or growing crops
		K = Krd x Krr			Jan	4.1			
1	220	1	1	30	Feb	23.7	1.00		
2	104	.9	.9		Mar	26.8	3.00		
3	56	.8	.8	50	Apr	17.6			
4	56	.7	.7		May	11.0	5.00		
4L	56	.6	.6	80	Jun	1.6	7.00		
5	38	.5	.5	100	Jul	.4	9.00		
6	21	.4	.4		Aug	.2			
7	21			120	Sep	.9	11.00		
8	0			150	Oct	1.3	13.00		
					Nov	5.0			
					Dec	7.6			

Lower Krd factor = lower soil erosion

Lower Krr factor = lower soil erosion

Lower C factor = lower soil erosion

Multiply the WED factor times the Width of the Field to determine the Unsheltered Distance (L) in feet.

The smaller the unsheltered distance, the lower the soil erosion

Refer to the Small Grain equivalents (SGe) curves found in the NRCS National Agronomy Manual (NAM), Part 502, Figures a-1 through d-8.

Higher residue = lower soil erosion

The SGe expresses the effectiveness of residue or growing crops in resisting wind erosion.

- **WEG** = Wind Erodibility Group
- **SEI** = Soil Erodibility Index (I) for irrigated soils
- **Krd** = Soil Ridge Roughness factor (is a function of Ridge height & Spacing, Angle of deviation & SEI)
- **Krr** = Random Roughness (rr) factor (Krr is a function of Cloddiness, as created by tillage & SEI)
- **C** is a function of windspeed & surface soil moisture
- **% EWE** = % Erosive Wind Energy (values are for Las Cruces, NM)

- **WED** = Wind Erosion Direction factor (Reference: Tables 502-8A thru 502-8E of the NRCS NAM). WED factors are a function of field length/width ratio, wind preponderance and angle of deviation.
- **V** factor relates the kind, amount & orientation of vegetative material to its equivalent in lbs/ac of small grain residue in reference condition Small Grain Equivalent (SGe)

e.g. calculation: A fine textured soil was irrigated 3x during 45 days. 12% of the annual EWE occurs during this period. Therefore: Texture Wetness Factor (TWF) = 3; No. of irrigations during period = 3; Nonerodible Wet Days = 3 x 3 = 9; Irrigation Factor (IF) = (45 – 9) ÷ 45 = .80; Adjusted EWE = (.80) (12%) = 9.6%

Note: angle of deviation is 0^0, when wind is perpendicular to the row

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NOTE: NRCS will be using WEPS (Wind Erosion Prediction System) to make wind erosion assessments